IBM

Amateur
Radio Club
of
Boca Raton

-- WB4QNX --

May 1987

IBM AMATEUR RADIO CLUB OF BOCA RATON

NEXT RADIO CLUB MEETING

Date: May 14, 1987
Time: 5 P.M.
Place: IBM Bldg. 003-1, Room N123.

REMINDER--The Net is at 8:30 every Thursday on 145.290

Phone numbers in the Shack(ECF)

982-5711 and 982-5712.

These numbers are for the work station, not the repeater.

The Radio Club meets the 2nd Thursday of each month.[1]

Your Club Officers

President:	Wendell Ficklin	KD4B	2-1195
Vice President:	Bob Jankuv	WA2HFA	2-0970
Treasurer:	Bob Townsend	KD4AO	8-0044
Secretary:	Tom Lewis	N4TL	1-2050

Your Club Chairpersons

Emergency Coordinator:	Bill Piazza	KB4QVY	1-7171
Graphics Designer:	Wendell Ficklin	KD4B	2-1195
Newsletter Editor:	Mike Lukens	N4KBC	1-8251
Reporter - DX:	Tom Lewis	N4TL	1-2050
Reporter - Contests:	Vant Morell	WA4CTC	1-800-241-1981
Reporter - Packet Radio:	Bill Piazza	KB4QVY	1-7171
Roster and Labels:	Pete Brunet	WS4G	8-2598
Political Advisor:	Stu Glass	W4RJD	8-4251
AFE Liaison:	Bob Mott	AI4M	8-9911
FCC Listening Station			473-9845

Editors Note: If you have changes to make to the phone tree, please notify Mike LUKENS at BCRVMPC1.

[1] This Club is a sub-club of the IBM club.

President's QRM

This promises to be an exciting year for our organization. With the acquisition of new equipment in most of our functional areas, we will see our club grow in membership and activities.

Our special project of developing truly portable packet stations is now underway. We will soon be upgrading our station equipment and two-meter repeater. Our capability of providing community service will be enhanced considerably.

All of this has not come easily. For the past few years many individuals have expended a lot of time and effort to see things happen that are now happening. Some of those individuals have since moved on to other locations but their efforts are only now coming to fruition. I commend those who unselfishly gave of themselves to further the livelihood of this organization.

It's not over however. With the new equipment coming into use and special projects getting off the ground, more time and expertise will be needed. Don't feel that the time has arrived to sit back and wonder what to do next. The momentum is increasing and there is even more work to do.

It is with pleasure that I announce the appointment of Bill Piazza, KB4QVY, as the Emergency Coordinator. Although I held that position for a couple of years, the responsibilities are still vague. Suffice to say that in an emergency situation (hurricane, earthquake, or the annual Simulated Emergency Test) the coordinator would be more or less responsible for ensuring adequate coverage by volunteers (soliciting them if necessary), developing timetables for operators, contacting site communications in the event that local press and TV wanted information from us, arranging for interpreters if needed (such was the case during the Mexico earthquake), and "other duties as assigned." The job of an emergency coordinator is more or less that of someone who puts out fires.

Recently two digipeaters on 145.030, DRB and SUN, were removed from service. This left a rather large "hole" in the .030 coverage in south Palm Beach and north Broward counties. The DRB (Delray Beach) site was lost and the equipment was loaned to the IBM ARC to place on the air as a temporary solution. At this time the digi is located in the ECF and is operating under the mnemonic of BCR-2 and covers an area from Miami to Jupiter. I say *temporary* because 1) the equipment is not ours, and 2) our digi BCR on .010 interferes with BCR-2 on .030. They are separated by only 1000 feet. There are two solutions to this:

1. Move the new digi to another location (which we don't really have at this time)

2. Place resonant cavities in line with each digi's antenna (and there are no cavities available at this time).

I'm open to suggestions for another location. Height is a requirement to ensure good coverage. We could provide all the equipment if necessary.

Chuck Statkus has offered to operate and maintain a new PBBS for us on 145.030. At present the only hitch is the availability of a two-meter transceiver. It would seem reasonable that at some point in the future we could place this PBBS on the air BUT on a new frequency such as 145.070 along with a new digi. This would give us a true LAN (Local Area Network) off of the heavily loaded channels and a PBBS primarily but not exclusively for our membership. In the not to distant future 145.070 could also serve as our primary LAN for use by our portable packet systems currently under development.

Tales of a New Packeteer

by Bill Piazza, KB4QVY

Part 11 – An interview with Jack Botner, VE3LNY, of HAPN

(This month, I am presenting an interview with Jack Botner, VE3LNY. Jack is an IBMer in Toronto, Canada. He is very active in the Hamilton and Area Packet Network (HAPN) and was instrumental in the design of the HAPN-1 adapter. The HAPN-1 card is an IBM PC adapter which includes an HDLC protocol chip and a Bell 202-compatible modem. A major departure from other TNC designs was the use of the PC's own 8088 microprocessor as the controller, eliminating the need for additional RAM, ROM, and a dedicated Z80 or 6809.

Jack's work has been featured in QEX in January, 1985 and in Ham Radio Magazine in August, 1986.

The interview was conducted over VNET during the months of January and February, 1987)

KB4QVY: First, tell us a little about Jack Botner. How long have you been a ham and how did you get involved with packet radio?

VE3LNY: I've been licensed since 1979 and I live in Toronto. When I got a PC in 1982, I got interested in RTTY and played around with that for about a year. Then I found out about packet radio and got a VADCG TNC. (ED. NOTE - VADCG = VANCOUVER AREA DIGITAL COMMUNICATIONS GROUP)

The active packet group in my area was HAPN (Hamilton and Area Packet Network). Next to the Vancouver group, HAPN had been the most active group experimenting in packet radio in the early '80s. Stu, VE3MWM, published an excellent series of newsletters on packet, and John, VE3DVV, wrote digipeater code for the VADCG TNC. Other members of the group such as Glenn, VE3DSP, were busy tailoring the TNC code to interface with different host computers.

KB4QVY: How big is HAPN (roughly?)

VE3LNY: HAPN is about 6 people. There is no formal organization or membership list. You can be a member if you are interested in and contribute towards our activities.

I have included more information on HAPN at the end if you are interested. (ED. NOTE - SEE SIDE BAR ON "HAPN")

KB4QVY: What part did you play in the design and implementation of the HAPN card?

VE3LNY: I had no trouble putting the VADCG TNC on the air but found the serial port interface between the PC and the TNC clumsy. I didn't care much for 8085 programming and burning EPROMS, so I thought about alternative ways of achieving packet radio without the disadvantages of the outboard TNC. It occurred to me that the synchronous controller used in the TNC, an 8273, was made by Intel and was designed to interface to the bus in the PC quite easily. So I designed a simple circuit using the 8273, largely copied from the VADCG TNC, and put it on an IBM prototype card. The circuit was subsequently published in QEX, January, 1985.

The real challenge was to write software to run on this adapter. This job was much more difficult than building the hardware, but I was rewarded with a self-contained system that runs on the PC and achieves all of my objectives. The HAPN-1 adapter was adapted

from my design by John, VE3DVV, to include an internal modem and some self-test circuitry, and a PCB layout was designed by Max, VE3DNM. The same software that ran on my original prototype also runs on the HAPN-1 and I am still using the prototype today.

KB4QVY: What are some of the advantages and disadvantages of your design?

VE3LNY:

- Advantages:

  - The entire TNC and modem is on one PC board that plugs in to a slot on the PC. All that is required is a cable to attach it to the transceiver.

  - There is no clumsy serial interface required to control the adapter. All data transfers are fully transparent. There is no need for 2 levels of communication (command and data).

  - The host software uses pop-up dialogues so that there is no need to remember various commands and formats.

  - The programming is native 8088 code not code for "foreign" processors (such as Z80) requiring cross-assemblers and burning eproms.

  - Experimental protocols such as VADCG V1 and V2 are available.

- Disadvantages:

  - Our implementation does not (as yet) support multiple connects and multiple ports.

  - Our modem supports baud rates up to 1200 but is not easy to switch between different baud rates.

KB4QVY: I'm very interested in hearing more about the software that you've written for the HAPN-1 card. Is the software that drives the card AX.25 compatible?

VE3LNY: Yes the software is AX.25 version 2 compatible.

KB4QVY: Does the software allow the HAPN card to digipeat, etc.? (Aside from multi-stream capability, are there any limitations that you're aware of when the HAPN-1 card is compared to, say, a TNC-1 or -2?)

VE3LNY: Yes the HAPN-1 digipeats. There are a few features available in the TNCs that we don't provide, such as buddy list and calls heard.

KB4QVY: Will popular terminal emulation programs such as QMODEM and PC-TALK work with the card, or does it require special terminal software?

VE3LNY: Terminal emulation programs won't work with the HAPN-1. They're all designed to communicate using the serial port. The HAPN-1 has its own application program interface, which is documented, and allows access from any program.

KB4QVY: Is source code for the HAPN-1 adapter available?

VE3LNY: No. As IBM employees we are normally forbidden to develop computer related products on our own time. IBM management has consented to allow us to distribute the programs in executable form only to amateurs.

KB4QVY: Our club is currently working on a project called Oracle, which is a portable packet radio station based upon a PC Convertible. The HAPN-1 card appears to be a good choice for a project like that because with a relayout it could be made to work in the PC Convertible's modem card slot. Has HAPN had any experience with portable packet stations?

VE3LNY: No we haven't.

KB4QVY: What projects is HAPN currently working on?

VE3LNY: Our main project right now is the 4800 BPS modem which we will be making available later this year. Beta testing is almost complete and the modem has proven very successful. We are also working on software for the HAPN-1 that implements the new VADCG protocol V3.

KB4QVY: Jack, thank you for the interview and if you are ever in Boca be sure to let us know.

VE3LNY: You're welcome.

Next month:

73 & CUL
Bill

A History of HAPN

by John, VE3DVV:

Here is a short history about the achievements and failures of the things we have done.

1. About 5 years ago we built our first TNCs. There was no proven software or modems. We had to design our own modems and test the hardware with the help of a 20 meter beacon put on the air by VE7APU (running 300 baud). For a modem we were using a modified RTTY terminal unit.

2. After the receive function was tested we needed to have 2 TNCs talk to each other. But first we had to design and build our modems, since we had no surplus, commercial modems available.

   Note: *This modem (VE3DVV type) is easily built on a small Radio Shack prototype card and has some unique features which proved to be very handy.*

3. The early software for the TNCs written by Doug VE7APU needed much testing. We were supplying Doug with much needed feedback to improve the code (V1). Locally we wrote a number of different TIPs to support different types of terminals (eg. the voice terminal VOTRAX). We wrote also a number of HOST computer interface programs.

4. About a year later the HAPN group was formed and we decided to start building a network starting out with a repeater and an RBBS system. Stu VE3MWM single handedly put together our official newsletter (which was being read all over the world).

5. We promoted packet radio with a number of demonstrations at radio clubs, RSO conventions, Rochester convention etc.

6. The first packet radio RBBS (written by VE3MWM running on a CP/M system) was running soon. The RBBS also contained a gateway to the telephone network, so landliners could directly communicate to fellow hams on the radio.

   Note: This was the first Ham packet radio RBBS with a telephone gateway anywhere in the world!

7. At the same time some of us were busy putting hardware together for a digital repeater (VE3PKT).

8. Also the current V1 repeater code was written. This repeater had some unique features like time of day clock, beacon message, save, trap and dump commands allowing the repeater to be used as a remote data scope to study the packet formats and debug new software being written. Also you could experiment with different CTS delays to check the turn around of your radio and modem to determine which rigs were best suited for packet radio. Also you could do commands to log on and off from the repeater.

9. South of us the American hams became interested in packet radio after the FCC changed it's rulings. Bob W4UCH was one of the earlier hams (for US hams that is) involved in packet radio and decided to try emulating a VADCG TNC in software on a TRS80. We welcomed Bob with his initiative and spend many evenings helping him test his software.

   (If it was not for the help from radio hams such as VE7APU, VE3MWM, VE3DSP, and VE3DVV, I believe Bob still would have been busy trying to make the SDLC frame check sequence work!)

   Bob also made good use of the repeater for debugging his software.

   The software UART approach (as opposed to the hardware 8273-type implementation) turned out to be largely compatible with our VADCG TNC's V1 protocol except for the fact that it did not send RNR (receive not ready) when Bob was typing in a message or was saving data to the disk. This of course caused unnecessary retries on the channel. Since the hardware required to run this software was easy and cheap to make it drew commercial attention by GLB Electronics (Gil is a friend of Bob). He now markets a small board known as the PK1 TNC.

   It was somewhat disappointing that the above RNR problem had not been corrected. Another problem is the RS232-type terminal interface not putting out standard RS232 voltages (+12/3V and -12/3V) adding to the unreliability. Also some standard handshaking lines such as DTR and CD are missing.

10. We were looking towards expanding our packet radio out towards Buffalo and went over there to give a demonstration at their radio club. As a result of their interest VE3MWM even built a repeater for the Buffalo area to help them get going.

11. At the hardware end we had started (with a small group of members) a project to develop a high speed (50kb) radio and modem for 220 MHz. The specifications were written and the design started. Hams that were participating in this project were VE3CES, VE3DNL, VE3IAC, VE3DNM, VE7APU, and VE3DVV. The VFO (synthesized) and IF strip were built and tested. We tried to get Gil of GLB involved since he would be in a good position to produce these radios commercially for high speed radio links. We send GLB our design and asked for his suggestions. For reasons that were never clear to us Gil never answered. Due to our widely spread out area and the difficulty in having regular meetings the project lost momentum and eventually stopped.

12. Due to the cost involved with building a station node and not being familiar with STOIC (the language Doug (VE7APU) used) we did not get started with a station node in this area. We decided to wait till we would have more members that could help share the cost. Also time passed and other alternatives in hardware and software became available.

13. Jack VE3LNY designed an adapter card for the IBM PC. It is simple to wire up on a prototype card. (See the article in the ARRL experimenters exchange letter.) He also wrote the software to go along with it so it would be 100% compatible with our VADCG TNCs (both V1 and V2). Most of the code is written in "C" and is very modular. In this area 3 of these cards are in use and another 3 are being put together.

    Another of Jack's achievements is the writing of a friendly radio bulletin board (in C) that runs either the VADCG TNC or the LNY-adapter card. He also designed a smart file transfer protocol which makes any type of file transfers a breeze. (The file transfer program can easily be implemented in other host computers and is now running on IBM PC, S100, CP/M, and Apple systems with great success.)

14. In the area of Satellite Packet Radio, Stu (VE3MWM) once again showed us how it could be done. He has built a sophisticated satellite ground station at his QTH in Burlington. He runs regular skeds with VK2ZQX in Australia using VADCG nodes and software. For complete details look at the QST articles he wrote or talk to Stu himself. He

would like to make such a packet radio station a part of a smart Network in this area.

15. In 1985 HAPN split into two groups. Most of the members formed a group called SOPRA (Southern Ontario Packet Radio Association). This group was mainly interested in forming a user-oriented association based on existing AX.25 technology. The remaining members were mainly the original founders of HAPN, who were interested in continuing experimentation and development. The HAPN-1 adapter was developed, and HAPN is presently developing a 4800-BPS modem for packet radio.

Repeater (Lunatic) Fringe

by KD4B

I had an opportunity to do some impromptu research recently on the useable range of our repeater. One day during the week I took an overnight trip to Marathon in the Keys to meet an old friend down from the north on business. I left Delray around 7:30 PM Thursday evening figuring I would be just out of range by the time the 8:30 Emergency Preparedness Net got underway. As it turned out I was on the turnpike extension on the southwest side of Miami when the net started. I could hear the net on and off so I decided to pull off at one of those *good spots* in the reception and check in before I lost all contact. That was a rather rewarding experience considering I was using an Avanti antenna mounted on my side glass and running about 48 watts out. The distance to that point was approximately 60 miles. "Not bad!", I thought. A rather pleasant surprise was yet to come. About an hour later I was in the vicinity of Tavernier on Plantation Key. I had left the radio on and began to hear some activity on 145.290 again. I thought I'd try it just for the heck of it. I keyed the mike once and heard the reset tone. *Wow!* I thought, that'll probably never happen again. I knew that it was possible to hit our repeater from one or two spots in the keys but they were atop the high bridges over a couple of navigation channels. I figured since I had nothing else to do during the drive I would continue to key (and ID) often and determine where these "spots", if any more, were located. Much to my surprise there were MANY such locations where I could hit the repeater and actually make phone patches (Ok. I know April is over and my credibility is not much better than Ollie North's after the last newsletter but honest folks, this is TRUE!.)

I decided to call to anyone who was listening and got N4KBC, KJ4BX, AI4M, and some others in on the

action. AI4M accused me of driving around on Hillsboro Boulevard and pulling a hoax. At least that's what he deduced since my signal sounded similar to that location. At that time I was in the vicinity of Islamorada. They indicated that my signal was close to patch quality so I tried a patch to the XYL. Sure enough, it worked. I was able to bring the patch up, let her know I had made it into the Keys after the storm, and then bring the patch down. I continued to converse with several of the people in Boca all the way to Marathon, with only occasional lapses in communication which I would understand later. My first impression was that this was an anomaly in the usual coverage of our repeater and was probably due to the storm front which had passed through earlier in the evening (thermal inversions and such) and that I would probably not be able to replicate the feat come morning. I was wrong! (Hey, only the first time this year, gimme a break.) Friday morning I discovered that the coverage was nearly identical to the evening before. I was able to converse again with several club members as they headed into the office.

What I was able to determine relative to the repeater's coverage into the Keys was that as long as I could actually see the open water to the north I could have a reasonable link to the repeater. I don't know if this coverage extends to Key West but I have a feeling it does. However, it should be noted that from Marathon to Key West there are a LOT of mangroves to the north of the highway and I suspect that in those areas the coverage will suffer but once into Key West, on the north side, the coverage should be adequate. My theory at this point is that the water surface serves as a conduit of sorts as long as the angle of radiation is low and the antenna is very near the water's edge. Consider this: Open water and the Everglades account for a little more than 60% of the path from the Keys to Boca. Secondly, there have been tests conducted between Miami and the Bahamas using antennas located VERY near the ocean's surface (within a few feet) with reasonable success. Thirdly, for those skeptical of the role of the water in this propagation, I ran a program to determine the line-of-sight distance from Boca to Marathon. The airline distance is about 136 miles. Given that the repeater antenna height is about 100 feet, my car would have to be about six-thousand feet above sea-level to be line-of-sight to the repeater! I also observed at those times when I was high above the water (around 70 feet) on the bridges over certain navigation channels the coverage was no better than when I was only a few feet above sea-level and near the water's edge. Whenever trees or buildings came between me and the water, I would lose contact.

When contact was possible, it was usually S-0 to S-1 with "snow" but perfectly readable.

I would encourage anyone who travels to the Keys to try this for themselves and report the results. I am not alone in this experience. I received confirmation from Roy Cole, N7CUS, that he has also been able to hit the repeater and make phone patches from the Keys with 13 watts and a 5/8 wave antenna on the car while in Islamorada (In fact, he has done this more than once.) This phenomenon seems to be rather consistent and not weather related but it's too soon to be certain. I plan to go back to the Keys to do some camping and more research on this. One of the things I will do will be to place an antenna VERY near the water and use different power levels, polarization, antennas, and even different repeaters up the east and west coast of Florida.

Silicon Junction Newsletter Excerpts

FCC EXTENDS FILING DATE FOR DOCKET 87-14

Acting on numerous requests from amateurs around the country, the FCC has extended the filing date for Docket 87-14 from April 6 to May 21. This is a minor victory for the ham community in that this will allow 45 more days for people to formulate and file comments with the Commission against the taking of 220-222 MHz. A number of forums at the Dayton Hamvention are already planned to address this topic. While we have gotten this reprieve, take the time now to start writing your letter to the commission. Don't wait for the last minute. This fight is one that involves all of us, not just users of the 220 MHz spectrum. It must be made very clear to the Commission (and possibly to a few legislators) that offering up spectrum to the users just because they happen to have more power and influence is not the proper function of the FCC and is not necessary in the best public interest. Amateurs have very valid reasons to hold all of 220 MHz such as continued growth and experimentation. So far, there have been over 1000 letters received at the commission, all against the proposal. Many more should be sent to emphasize the point that amateur radio is not just a minor inconvenience to interests that want more spectrum. The nocode proposal, offered a few years ago, resulted in 3000 comments filed with the commission. We must equal or better that number to demonstrate that we are vehemently opposed to this proposal. For more information and the latest updates, keep tuned to Westlink on Monday and Tuesday at

8:30 pm. Special bulletins on how to formulate and file your comments will be aired on Tuesdays and Thursdays. Discussions on the repeater will be held after these bulletins for those needing more information. The time to act is now!

NEW HAM NET ON THE AIR

The New Ham Net came to life March 16 on the 25/85 repeater. The response has been good with 8-10 participants each week. Most take part in the net with a high level of enthusiasm. I have seen a marked improvement in a number of the operators in their ability to converse on the air and feel comfortable about it. One of the highlights was the round table discussion on code practice. Can you imagine a 15 minute discussion amongst eight operators without net control and absolutely no doubling? Well, it happened two weeks ago. The Net is an excellent way to demonstrate ham radio to potential hams. Why not check in sometime and put a new or potential new ham on the air. The net meets Monday night at 8:30-9:30 pm on 146.85.

NOVICES INVADE TEN METERS!

Well, it didn't seem like an invasion on March 20, but a few Novices and Technicians did show up to exercise their new privileges. No Novices have been heard locally on 220 MHz, however a few were heard operating on the New England Net work. Some of the callsigns heard on ten: WA2CHY, KA1KLI, KA1KLJ, KA1NRR, KA1LEX and KA1MTO. Try giving a few calls around 28.340. You might scare up some activity!

FIELD DAY IS COMING

Any wedding invitations or any other plans for the weekend of June 27-28 should be turned down as this is Field Day weekend. Can the Silicon Junction Radio Club repeat as national champions in the 2A category? Can a substitute for the elm tree (r.i.p.) be found to hold up the dipoles. Only time will tell. At any rate, competition aside, let's strive to have fun also. Discussion about Field Day will start at the May meeting and continue throughout the various daily lunch table discussions.

UPCOMING EVENTS

June 13-14	Sat-Sun	VHF QSO Party
June 27-28	Sat-Sun	Field Day !!

Field Day

by Ed Oleksak, W1UY

It's time for Field Day Planning

WHEN: June 27-28, 1987

WHERE: FAU Campus (S.W. corner between the tennis courts and the swimming pool.

WHAT: Novice Station

Packet Radio

One of two H.F. Stations

WITH: Refreshments

Food

Ample Close-in Parking

Good Weather

Need: Participants.

- Set-up Saturday A.M.

- Operation (1400 to 1400, 27th - 28th

- Tear-down Sunday P.M.

Novice Station and Antenna system

Packet Radio set-up

HF Stations and Antennas

Extension Ladder, camp stove, gas containers generators, tarp, coax, rope, wire and tent trailer

In order to plan for an enjoyable and successful field day, there is a need for club members to help with their services and/or equipment. So please contact me via the Thursday FM net, at 392-3409 or any club officer as soon as possible.

Thanks
Ed Oleksak - W1UY

For Sale

17' Grumman "Livery" Canoe $400.00 Bob Jankuv 994-8709

Kenwood TS-520, Tuner, Keyer, Dummy Load, Coax & Mini-Quad $600 Benito Loyola KA4LJY 553-3416 or 638-8050

For Sale, DX-160 Receiver

5 Band 150 KHz to 30 MHz

With manual

Call ED OLEKSAK 496-4010

For Sale:

HW101, Power Mike, Low-pass RF filter, CW Filter, 1661 Speaker, Power Supply, Cables and Manual complete.

Jack Reynolds 394-3794 or 241-6316

If undeliverable, please return to:
 Tom Lewis
 IBM Corporation
 4614
 Boca Raton, Florida

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        Jack Botner          VE3LNY
        2G/454/1150
        Toronto, ON
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